they will find here stated the present condition of all the questions under this head.

NOTES AND NEWS.

THE daily papers announce that the U. S. commissioner of agriculture has established as a part of Dr. Riley's division a branch of investigation relating to economic ornithology, and has appointed Dr. C. Hart Merriam, a well-known ornithologist, and secretary of the American ornithologists' union, a special agent to take charge of this part of the work. Dr. Merriam will make his headquarters at Sing Sing, N.Y., until Oct. 1, and after that at Washington. The scope of the investigation will cover the entire field of inter-relation of birds and agriculture, particularly from the entomologist's stand-point. The inquiry will relate primarily to the food and habits of birds, but will include also the collection of data bearing on the migration and geographical distribution of North-American species. In this last inquiry the department hopes to have the co-operation of the ornithologists' union, Dr. Merriam being at the head of the union's committee on migration.

— The sixth annual meeting of the Society for the promotion of agricultural science will be held at Ann Arbor on Tuesday, Aug. 25. There will be public sessions in the forenoon and afternoon, and a business meeting in the evening. The entomological and botanical clubs of the association will also hold their meetings on Tuesday.

— The Western society for psychical research was organized at Chicago in May, and held its first meeting on Tuesday evening, June 3, at the Sherman house in that city. The president, Dr. A. Reeves Jackson, delivered an address, which has been published. Committees were appointed on thought-transference; hypnotism, clairvoyance, and somnambulance; apparitions and haunted houses; physical phenomena; and psychopathy, "under which head attention may be given to what is popularly known under the various names of 'mind-cure,' 'faith-cure,' 'metaphysical treatment,' 'magnetic healing,' etc." The officers of the society are, president, Dr. A. Reeves Jackson; vice-presidents, Rev. C. G. Trusdell and Professor Rodney Welch; secretary and treasurer, J. E. Woodhead.

— The section of mechanical science (and engineering) of the American association for the advancement of science promises to have interesting sessions at the Ann-Arbor meeting. The committee on the best method of teaching mechanical engineering — Prof. J. Burkitt Webb, Prof. George J. Alden, Dr. Calvin M. Woodward, and Professor Arthur Beardsley — request all who are interested to make sure of being present at the particular session to be devoted to this subject, and to come prepared to take an active part in the discussion of the same. The committee on the use and value of accurate standards, screws, surfaces, and gauges, and of systematic drawings in the modern machine-shop, — Prof. William A. Rogers, Mr. Oberlin Smith, and Prof. J. Burkitt Webb, — have arranged for a special session upon this subject; and they would urge those who feel its importance to present papers, and join in the discussion.

— In his annual address as president of the Royal geographical society, Lord Aberdare called particular attention to a report (which is soon to be printed), by Mr. Scott Keltie, on the state of geographical education in Great Britain. According to this, it appears that the books are poor, the instruction inadequate, and the encouragement wanting in almost all schools, and particularly in schools of high grade. Geography as a class subject is not recognized by professorship or readership in the universities. On the continent, and especially in Germany, the case is very different. Twelve professorships of geography may be found in the twenty-one universities of Germany, and most of the twelve have been founded within the last twelve years. The ideal aimed at is a continuous course of geographical instruction from the youngest school-year up to the university. Mr. Keltie gives examples of some of the lessons which he heard, indicative of a masterly as well as a practical treatment of the subjects in hand. Lord Aberdare commended heartily this new effort of the geographical society to secure better geographical education. Toward the close of his address, he referred to the past year as full of geographical researches. "Never has the ferment among nations been so wide-spread, or prophetic of such great consequences," he remarked with reference to the operations of the French in Asia and Africa; the Russians in central Asia; the English in Afghan, on more than one border of India, on all sides of Africa, and in Oceanica; the Germans on the African coasts; and the Italians on the Red Sea. These invading hosts, he continues, have had in their trains "naturalists, ethnologists, geologists, — men trained in all the sciences which illustrate geography; . . . knowledge and conquest thus march hand in hand; . . . out of the nettle danger, we pluck the flower knowledge; . . . however much we deplore the violence, we cannot be blind to the scientific results which followed upon the displacement of barbarous people by the civilized."

— It is suggested by the chairman of Section I of the American association for the advancement of science, that a subject, perhaps of principal investigation and discussion at the ensuing meeting, shall be, "The daily ration of the food of working-people in the different sections of the country. 1°. Of what does this ration now consist, and what does it cost? 2°. What proportion does the average cost of food bear to the total cost of living? 3°. What is a true or standard ration, measured by the relative proportions of proteine, fats, and carbohydrates? 4°. What are the kinds of food which contain proteine in largest proportion at the lowest relative cost? 5°. In what manner can a variety of daily rations be made up, each of which shall contain the requisite quantities of nutriment? 6°. Can a schedule of rations at low cost be presented, whereby much of the present waste of

food, or of money expended in its purchase, may be saved? 7°. In what way can information be distributed upon this subject, so as to enable working-people to use true economy in the purchase and in the preparation of food?" The attention of the chairman, Edward Atkinson, has been lately called to the great dearth of the statistics of consumption; and he has been promised the valuable aid of the chiefs of the several bureaus of statistics of labor, and of Prof. W. O. Atwater of Middletown, Conn., in making preparation for this discussion.

— Prof. Robert H. Thurston of Stevens institute, Hoboken, N.J., has accepted the post of professor of mechanical engineering, and director of Sibley college, in Cornell university, Ithaca, N.Y.

— An expedition under the auspices of the Royal geographical society of Vienna was to start in June of this year for the region of the Kongo. Its primary object is to explore the territory lying on the watershed between the Kongo and the Nile, with a view to extending the exact geographical knowledge of that region, and also to studying its natural history and ethnology, and investigating the commercial relations of the new Kongo state. A secondary object will be to obtain news of a former party of explorers, who have been for two years kept confined in the region of the upper Nile on account of the Mahdi affair. On account of the same revolt, the present party will be obliged, instead of taking the usual Nile route, to go to the mouth of the Kongo, and work up that river to the region of the intended explorations. From Stanley Pool two steamers belonging to English parties ply up the river; and the leader of the expedition, Dr. Oscar Lenz, hopes to be able to use one of these to reach a suitable point on the upper Kongo, for the starting-point of his explorations. From this point on, Dr. Lenz has formed no definite plans but will proceed according to the necessities of the occasion, knowing that the territory is as yet completely unexplored, and that every step will add to our geographical knowledge. He hopes to return in about a year and a half; and, indeed, the sum of twenty-five thousand florins, which has been raised for the expedition, will cover the expenses for no longer time than this.

— The French Academy of sciences has awarded the Institute's biennial prize of twenty thousand francs to Dr. Brown Séquard.

— The Japanese have at last, says *Nature*, after much hesitation, promulgated a patent law. As in America, with respect to copyright, it was argued, that, with no patent protection, the Japanese got the benefit of the inventions of the whole world. The new law appears, like many other recent Japanese laws, to be compiled from similar laws of other countries, — a clause from England here, from France there, from Germany in another place, as seemed advisable in the circumstances. The term of protection is fifteen years. "Articles that tend to disturb social tranquillity, or demoralize customs and fashions, or are injurious to health," and medicines, cannot be patented. The inventions must have been publicly applied within two years; and patents will become void when the patented inventions have been imported from abroad, and sold, — an illiberal provision, which prevents the patenting of foreign inventions in Japan, unless the inventor also manufactures them in the country, and which therefore renders the new law practically useless to any but the Japanese inventor. The fees are low, amounting to about three pounds sterling for fifteen years' protection, the one payment down being sufficient; while there are no annuities or annual payments for keeping the protection in force, as in many European countries. The punishments for breaches of the regulations are sufficiently severe to act as a warning against infringement.

— The organizing committee of section A of the British association has arranged for the following discussions at the Aberdeen meeting: 1°, On kinetic theories of gases; and, 2°, On the standards of white light.

— Professor Loomis's twenty-first 'Contribution to meteorology' (*Amer. journ. science*, July) returns to the discussion of the direction and velocity of movement of low-pressure areas, — cyclones, — which had already been treated in several earlier papers. The numerical results now attained agree closely with those already published. The average progressive velocity of cyclonic storms is given as follows: Bay of Bengal and China Sea, 8.4 miles per hour; West Indies, 13.7; Europe, 16.7; middle latitudes of Atlantic Ocean, 18.0; United States, 28.4. When this is combined with the results given in Finley's paper on storm-tracks, we find that our lake region possesses the unhappy pre-eminence of being visited by the most numerous and fastest-moving storm in the world, as far as the world is now known. Taking further account of the strong contrasts of winter temperatures between the Gulf of Mexico and the Hudson-Bay region, which supply the winds in the front and in the rear of the storms, we find sufficient explanation of the frequent and violent changes of weather in our interior states. Professor Loomis examines also the degree of correspondence between the average course of storms and the mean direction of the wind. While the two are not coincident, they are evidently connected, and, as the author points out, the departures of one from the other are probably due to the control exerted on storm-tracks by rainfall, as well as to the fact that the mean direction of the wind is derived from truly superficial observations, while the course of the storm marks the path of a commotion that affects a considerable thickness of atmosphere. It is found that for the mid-Atlantic, near latitude 50° north, the average storm-path corresponds very closely with the average wind direction; but in the western part of the Atlantic the storms turn 30° to the north or left of the wind, while in the eastern part the deviation is changed to 30° to the south or right of the wind. This may find explanation in the effect that the sea between the continents has on the direction of the winds near the shores. The ratio between the mean progress of storms and mean velocity of the

winds for the United States is 28.4 : 9.5, and for the North Atlantic it is 18.0 : 29.8; and this evidently depends largely on the control that land friction exerts on wind velocity.

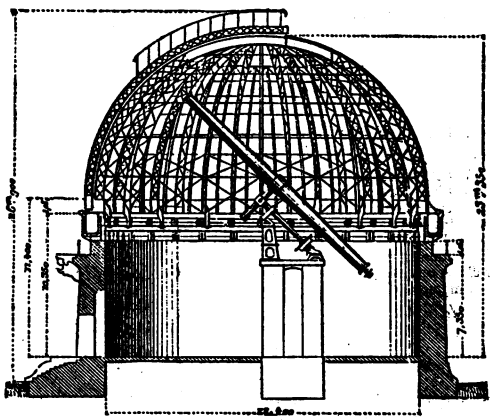

Fig. 1. — Section of floating dome at Nice.

— We learn from *Nature* that the floating dome presented by Bischoffsheim to the observatory at Nice is now finished, and has been recently on exhibition in Paris. It is intended to cover a colossal telescope. It is twenty-two metres in diameter inside, and has a circumference of more than sixty metres, or two metres more than the dome of the Pantheon. Instead of rendering it movable by placing it on rollers, according to the ordinary method, it is closed below by a reservoir for air, which rests on the water in a circular basin (fig. 2). A set of rollers is also placed under the dome to prevent cacillation, and for use when repairs are needed. This system of suspension is said to be so perfect, that, in spite of its great weight, a single person can turn it completely round the horizen. To provide against the water freezing, it has been proposed to dissolve in it a salt to the point of saturation, but it is feared that this may cause corrosion of the apparatus. Frosts, however, are rare in Nice, and special experiments on this subject will be made.

— 'The germ-theory of disease' formed the subject of the 'Alumni lectures' given this year by Dr. W. H. Thomson before the graduates of the Albany medical college.

— We learn from *Nature* that Mr. Burbidge, of the Trinity-college botanical gardens, Dublin, points out that Edelweiss is easily grown in English gardens from seed. It is sown in common garden-earth in a cold-frame, and, when large enough, each little plant is placed in a small pot in a mixture of loamy earth and old lime rubbish; or the plants, Mr. Burbidge says, are equally well pleased by a niche in a sunny rock-garden, provided a supply of their favorite lime rubbish or old mortar be afforded them.

— At the meeting of the Board of visitors of the Royal observatory, Greenwich, the annual report of the astronomer royal was received. In this it is mentioned, that on the publication of Professor Pickering's 'Harvard photometry,' all stars which he had noted as brighter than the sixth magnitude, and which had not been recently observed at Greenwich, were inserted in the working-catalogue, in order that the next Greenwich catalogue might contain all stars, down to the sixth magnitude, which have not been observed at Greenwich since 1860. It is also stated, that, as announced in the *Times* of Jan. 1, the public clock at the observatory entrance, and the other mean solar clocks, were put forward twelve hours so as to show Greenwich civil time, starting at midnight, and reckoning from 0 h. to 24 h., which would correspond with the universal time recommended by the Washington conference. The change from astronomical to civil reckoning has also been made in all the internal work of the observatory, and has been carried out without any difficulty. Greenwich civil time is found to be more convenient, on the whole, for the purposes of this observatory; but its introduction into the printed astronomical observations has been deferred to allow time for a general agreement among astronomers to be arrived at. It is proposed, however, to adopt the civil day without further delay in the printed magnetical results, thus reverting to the practice previous to 1848, and making the time-reckoning harmonize with that used in the meteorological

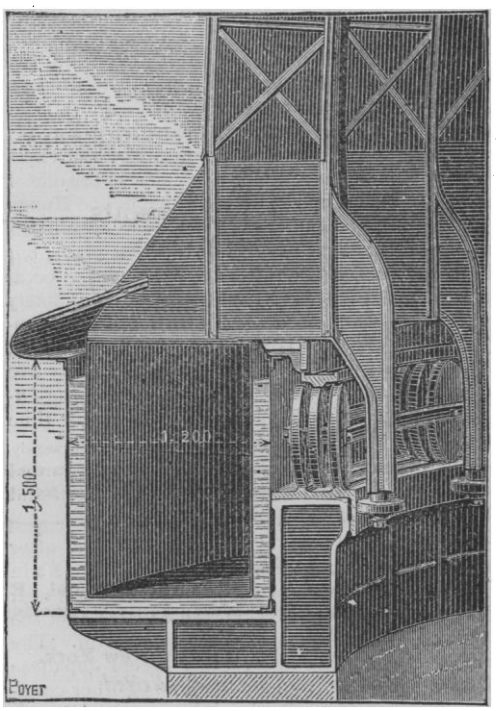

Fig. 2. — Section of float for astronomical dome at Nice.

results, the reckoning from 0 h. to 24 h. being for the future adopted in both cases. This was probably the first step taken after the Washington conference in conformity with its recommendations.